INDIANA DEPARTMENT OF TRANSPORTATION

INTER-DEPARTMENT COMMUNICATION

Standards Section – Room N642

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DESIGN MEMORANDUM No. 05-15
TECHNICAL ADVISORY

TO: **All Design, Operations, District Personnel, and Consultants**

FROM: ***/s/ Anthony L. Uremovich***
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SUBJECT: **Temporary Traffic Barrier (TTB)**

SUPERSEDES: ***Indiana Design Manual*** **Section 82-4.02(02)**

EFFECTIVE: **January 18, 2006, Letting**

A TTB is used to provide protection to motorists and workers in the work zone. The primary functions of TTB are as follows:

1. to separate two-way traffic;
2. to protect workers and pedestrians;
3. to keep traffic from entering work areas (e.g., excavations, storage sites); and
4. to protect construction elements (e.g., bridge falsework, exposed objects).

A. Types of TTB

Type 1. This type is used only to separate two-way traffic.

Type 2. This type is used to separate traffic from the work zone. It should be used to protect traffic from any obstruction, including an elevation differential of greater than 150 mm (6 in.), which is within the construction clear zone. It should also be used to shield traffic from extreme hazards during construction that may necessitate

consideration of a barrier between the construction clear zone and the permanent clear zone. For this situation, the designer should consider the construction zone design speed, the extent of the obstruction, and the potential for an elevation differential, and use engineering judgment in determining whether a TTB is necessary.

Type 3. This is type 1 TTB which is to be left in place upon completion of the contract and become the property of the Department.

Type 4. This type is used as a readily movable device to accommodate the shifting of traffic lanes possibly on a daily basis to better facilitate the directional distribution or other changing volumes of traffic during a day's peak hours. The barrier layout and signage for each phase, a staging-area diagram, and the location of the barrier-moving apparatus when it is not in use should be shown on the traffic control plan. The size of the barrier-moving apparatus should be taken as 15 m (50 ft) long by 5 m (16 ft) wide.

B. Construction Clear Zone and Flaring Considerations. The terminal end of a TTB type 1, 2, or 4 should be flared away from the traveled way to a point outside the construction clear zone. Construction clear zone distances are shown in *Indiana Design Manual* Figure 82-4B. The potentially hazardous conditions typically found within a construction zone warrant the use of considerable judgment when applying one of these widths. It is not necessary to adjust such width for horizontal curvature.

Indiana Design Manual Figure 82-4A, Flare Rates for Temporary Traffic Barrier, should be used to determine the desirable flare rate for the TTB based on the construction zone design speed, and not a lower worksite speed limit.

If a flared portion of TTB type 1 cannot be designed to end outside the construction clear zone, an acceptable construction zone energy absorbing terminal as described in *Indiana Design Manual* Section 83-4.02(03), Item 1, is required. A unit which has been successfully crash tested in accordance with NCHRP 350 Test Level 2 should be specified if the construction zone design speed is 70 km/h (45 mph) or lower. A unit which has been successfully crash tested in accordance with NCHRP 350 Test Level 3 should be specified if the construction zone design speed is 80 km/h (50 mph) or higher.

For a TTB type 2 or 4, if field conditions such as public road approaches or drives render the desirable flare rate impractical, the flare rate may range between 10:1 and 6:1. For a TTB type 2, the flare may be eliminated if the sharper flare rate cannot be attained. Such locations and flare treatments should be shown on the traffic control plan.

C. Glare Screens. Glare screens may be used in combination with TTB type 1 or type 3 to eliminate headlight glare from opposing traffic. Guidance regarding consideration of glare screens is described in Section 49-4.05(03).

D. Traffic-Control-Plan Information. Types, locations, and quantities of TTB, including locations and quantities of glare screens and energy absorbing terminals, along with flare rates should be shown on the traffic control plan for each traffic-maintenance phase.

E. Quantities and Pay Items. The total pay quantity of each type of TTB should be computed only once, regardless of how may traffic-maintenance phases it is to be used in, or how many times it must be moved.

The length of the longitudinal portion of TTB should be taken from the beginning point of where it is required to the ending point of where it is required. Gaps required to accommodate public road approaches or drives should be subtracted out. The length of each such gap should be taken as the approach or drive width plus its radii. The lengths of flared portions should be measured along the flares.

Construction zone energy absorbing terminals, if required for use with TTB type 1 or type 3, are separate pay items to be paid for only once, regardless of how may traffic-maintenance phases they are to be used in, or how many times they must be moved. The length of each construction zone energy absorbing terminal, if required for use with TTB type 2 or 4, should be taken as 11.43 m (37.5 ft) where used along an outside shoulder, or3.81 m (12.5 ft) where used along a median shoulder. Such lengths should be included in the linear quantities of TTB.

The costs of barrier delineators, and anchoring or other means required to control deflection, are included in the cost of TTB, so they should not be considered when determining the pay quantities.

The pay unit for TTB is meter (linear foot). The pay unit for energy absorbing terminal, cz, is each. The code numbers and pay items are as follows.

801-08400	Temporary Traffic Barrier, 1
801-08401	Temporary Traffic Barrier, 2
801-08402	Temporary Traffic Barrier, 3
801-08403	Temporary Traffic Barrier, 4
801-07023	Energy Absorbing Terminal, CZ, TL-2
801-07024	Energy Absorbing Terminal, CZ, TL-3

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